I placed a vacuum-tube, A, behind a lead screen, BB, 18 in. × 12⅛ in. thick. The screen had a 2-in. hole in it with a 2-in. pipe attached; 4 in. from the vacuum-tube was placed a speculum-metal mirror, 4 in. × 2½, at an angle of 45° with the lead screen; 4 in. from the mirror was a light-tight zinc box, E, with aluminium window, F; inside came first the objects, G, stuck on to a black cardboard, H, then I, the photographic plate.

The following objects were photographed in about 20 minutes:—

1. Some brass clock wheels.
2. A screw-cutting gauge.
3. Two lead disks.
4. The mirrors, being two pieces of speculum-metal used by me to divide upon. In Photograph 4 the crack between the plate can just be seen in the positive, but in the negative it is quite clear.

I hope to confirm the above experiments immediately: the delay is caused by the vacuum-tubes having all broken down.

IV. "Note on Lord Blythswood's Paper." By Lord Kelvin, F.R.S. Received March 19, 1896.

Röntgen, in (7) and (8) of his original paper,* described experiments seeming to prove the X rays to be incapable of regular reflection. He pointed out that the result of his experiment in (8), seeming possibly due to regular reflection, might be explained otherwise. Communications to the French Academy of Sciences, by Imbert and Bertin-Sans (March 2, 'Comptes Rendus,' pp. 524, 525) and Battelli and Garbasso (March 9, 'Comptes Rendus,' p. 603) refer to experiments proving not regular reflection, as from a polished surface, but a "diffuse" reflection. This, as Sir George Stokes has suggested in letters which I have received from him in the last few days, might either be due, as indicated by MM. Imbert and Bertin-Sans, to the reflecting surface, though polished for ordinary light, being rugged for light of the exceedingly short wave-length which may be attributed with probability to the Röntgen X rays; or else to a sort of phosphorescence, or possibly fluorescence, with regard to X light, produced in the substance of the mirror. One, and only one, of the photographs described in Lord Blythswood's communication, seems possibly decisive in proving regular reflection from the polished speculum-metal which he used. I enclose a copy of it, which may be clearer than that which accompanies his paper. In this I see quite clearly a straight line, with its two ends next the letters A, B, which for brevity I shall call the line AB. The space for

* Translation in 'Nature,' January 23, 1896.

about $2\frac{3}{4}$ cm., on the right-hand side of this line AB, is somewhat lighter than the space between it and the border about 10 cm. on its left. I find by careful measurement that the line AB is, at its end next A, 101·0 mm. from the last-mentioned border, and at a quarter of its length below B is 100·3 mm. from the same border. Corresponding measurements by the same eye and hand on another print of the same primary photograph, in which the line AB is scarcely visible, gave for its distance from the border at the end next A, 101·1 mm. From these measurements, and from the appearance of the print accompanying this note, I am convinced that there is a real difference on the two sides of a sharp boundary line AB which, as I am informed by Lord Blythswood, corresponds to the boundary between two mirrors of speculum-metal which were placed together in his experiment.

He promises further experiments with pieces of lead placed on the speculum-metal mirror. He has already tried experiments with pieces of paper and pasteboard placed on it; they show nothing on the photograph.

V. "On the Effect of the Röntgen X Rays on the Contact Electricity of Metals." By JAMES R. ERSKINE MURRAY, B.Sc., 1851 Exhibition Scholar, Trinity College, Cambridge. Communicated by Professor J. J. THOMSON, F.R.S. Received March 3, 1896.

§ 1. The experiments described in this communication were made in the Cavendish Laboratory of the University of Cambridge, at Professor J. J. Thomson's suggestion, in order to find whether the contact potential of a pair of plates of different metals is in any way affected by the passage of the Röntgen "X" rays between the plates.

§ 2. The vacuum bulb and induction coil for the production of the rays were enclosed in a box lined with metal, so that the plates and the apparatus used in measuring their contact potential difference should be screened from any direct electrical disturbances. At one side of the box there was a circular hole of about 3 cm. in diameter. The vacuum bulb was placed just inside this hole, and directed so that the rays should stream out through it in a direction perpendicular to the side of the box In some experiments this hole was closed by a tinfoil screen, which allowed a large proportion of the rays to pass out while shutting in ordinary electrical disturbances. The plates whose contact potential difference was to be measured were placed at a short distance outside the box, in such a position that the rays could fall on them.